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DATE: March 13, 2006
TO: Examiner Richard J. LEE
USPTO GPAU 2613
FROM: Ryan S. Davidson
Reg. No. 51,596

RE: Appeal Brief

U.S. APP NO.: 09/819,147

FILING DATE: March 27, 2001

APPLICANT(S): Indra LAKSONO

ATTY DKT NO.: 1459.0100010 (VIXS001)

TITLE: DEVICE AND METHOD FOR COMPRESSION OF A VIDEO STREAM

NO. OF PAGES (INCL. COVER SHEET): 14

Attached please find:

- Transmittal Form (1 pg)
- Reply Brief (12 pgs)

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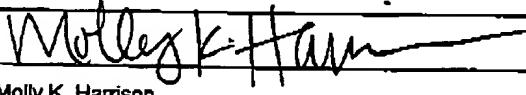
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Indra Laksono

For: DEVICE AND METHOD FOR COMPRESSION OF A VIDEO STREAM

App. No.: 09/819,147 Filed: 03/27/2001

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REPLY BRIEF

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This brief contains these items under the following headings, and in the order set forth below:

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The final page of this brief bears the agent's signature.

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I. STATUS OF CLAIMS**A. TOTAL NUMBER OF CLAIMS IN APPLICATION**

There are sixty-two (62) claims pending in the application (claims 1-4, 6-13, 15-20, 22-58, 60, 61, 63-65, 67 and 68).

B. STATUS OF ALL THE CLAIMS1. **Claims pending:**

Claims 1-4, 6-13, 15-20, 22-58, 60, 61, 63-65, 67 and 68.

2. **Claims withdrawn from consideration but not canceled:**

Claims 22-56.

3. **Claims allowed:**

NONE.

4. **Claims objected to:**

NONE.

5. **Claims rejected:**

Claims 1-4, 6-13, 15-20, 57, 58, 60, 61, 63-65, 67 and 68 are rejected under 35 U.S.C. § 103.

6. **Claims canceled:**

Claims 5, 14, 21, 59, 62 and 66.

C. CLAIMS ON APPEAL

There are twenty-seven (27) claims on appeal, claims 1-4, 6-13, 15-20, 57, 58, 60, 61, 63-65, 67 and 68.

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II. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 1-4, 6, 10-13, 60, 62, 63, 67 and 68 are rejected under 35 U.S.C. § 103 as unpatentable over United States Patent No. 5,635,985 to *Boyce et al* (hereinafter, “the *Boyce* reference”) in view of United States Patent No. 6,005,623 to *Takahashi et al* (hereinafter, “the *Takahashi* reference”) as set forth in the Final Office Action dated March 10, 2004 (hereinafter, “the Final Action”) and the subsequent Advisory Action dated May 25, 2004 (hereinafter, “the Advisory Action”).

B. Claims 7, 8, 15, 17, 19 and 20 are rejected under 35 U.S.C. § 103 as unpatentable over the *Boyce* reference in view of the *Takahashi* reference and further in view of *Video Trancoding By Reducing Spatial Resolution* (hereinafter, “the *Yin* reference”) as set forth in the Final Action and the subsequent Advisory Action.

C. Claims 9, 16 and 18 are rejected under 35 U.S.C. § 103 as unpatentable over the *Boyce* reference in view of the *Takahashi* reference and further in view of United States Patent No. 5,027,203 to *Samad et al* (hereinafter, “the *Samad* reference”) as set forth in the Final Action and the subsequent Advisory Action.

D. Claims 57, 58, 64 and 65 are rejected under 35 U.S.C. § 103 as unpatentable over the *Boyce* reference in view of the *Takahashi* reference and further in view of United States Patent No. 6,005,624 to *Vainsencher* (hereinafter, “the *Vainsencher* reference”) as set forth in the Final Action and the subsequent Advisory Action.

E. Claim 61 is rejected under 35 U.S.C. § 103 as unpatentable over the *Boyce* reference in view of the *Takahashi* reference and further in view of United States Patent No.

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6,236,683 to *Mogeat et al* (hereinafter, "the *Mogeat* reference") as set forth in the Final Action and the subsequent Advisory Action.

F. Claim 10 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite as set forth in the Final Action and the subsequent Advisory Action.

III. ARGUMENTS

In Section 5 of the Final Action, claims 1-4, 6, 10-13, 60, 62, 63, 67 and 68 were rejected under 35 U.S.C. § 103(a) as unpatentable over the *Boyce* reference in view of the *Takahashi* reference.

As stated in M.P.E.P. Section 2143, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Also, as stated in M.P.E.P. Section 2143.01, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The mere fact that references can be combined or modified does not render the resultant combination obvious.

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unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Further, as stated in M.P.E.P. Section 2143.01, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). That is, “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 165 USPQ 494, 496 (CCPA 1970). Additionally, as stated in M.P.E.P. Section 2141.02, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

A) Response to Examiner's assertion that the *Boyce* reference discloses storing motion vectors as provided by claims 1 and 11

Independent claim 1 recites the features of a video decoder to provide first motion vectors associated with a video input stream, a first memory coupled to the video decoder to store the first motion vectors, and an encoder coupled to the first memory to provide a compressed representation of scaled video data using the first motion vectors saved in the memory. Independent claim 11 recites the limitations of determining a plurality of first motion vectors associated with a compressed first video image and storing the plurality of first motion vectors. As discussed at pages 9-13 of the Appeal Brief, the *Boyce* reference fails to disclose or suggest the feature of a first memory coupled to the video decoder to store the first motion vectors as recited by claim 1 and the similar feature of storing the plurality of first motion vectors as recited by claim 11.

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In the Examiner's Answer, the Examiner disagrees and asserts that the *Boyce* reference does in fact disclose these claimed features. Specifically, the Examiner asserts that the *Boyce* reference discloses that "the coded data which includes the motion vector and DCT coefficient data are stored in buffer 116." *Examiner's Answer*, p. 12-13; *see also Examiner's Answer*, p. 13 (stating "the DCT coefficient data and motion vectors are necessarily stored in the coded data buffer 116 . . ." [citing the *Boyce* reference, col. 8, lines 58-63 and col. 11, lines 51-65])(emphasis added). The Examiner further asserts that this disclosure "is evident as shown at column 11, lines 51-65 of Boyce et al wherein it is taught that the motion vectors received as part of the video data stream supplied to the preparser is used by the MPC circuit 130 after buffering the motion vectors" and that "it is clear as shown in Figure 2A of Boyce et al that the motion vectors are buffered within buffer 116 before being supplied to the MPC circuit 130. Id., pp. 13-14. (emphasis added). For ease of reference, the cited passage of the *Boyce* reference at column 11, lines 51-65 is reproduced in its entirety:

MPEG supports the use of motion compensation and, in particular, P- frames and B- frames each of which rely on another frame as an anchor frame. The motion vectors received as part of the video data stream supplied to the preparser 112 were calculated at encoding time for use with full resolution video frames as opposed to downsampled video frames.

In accordance with the present invention, the downsampled frames supplied by the frame buffer 118 to the MCP circuit 130 are upsampled, e.g., on-the-fly, interpolated and then downsampled prior to generating predictions based on the motion vectors. In this manner the motion vectors which were originally generated based on full resolution video frames are effectively applied to downsampled video frames.

Boyce, col. 11, lines 51-65 (emphasis added).

The Appellant submits that, contrary to the Examiner's assertions, none of the passages of the *Boyce* reference cited by the Examiner, including the passage reproduced above, disclose or suggest that motion vectors are buffered or otherwise stored. Rather, with respect to motion

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vectors, the cited passages provide that motion vectors are "received as part of the video data stream supplied to the preparser 112." However, the *Boyce* reference fails to disclose that the variable length encoded data output by the preparser 112 includes motion vectors. Further, although the reproduced passage of the *Boyce* reference teaches "the downsampled frames supplied by the frame buffer 118 to the MCP circuit 130 are upsampled . . . , interpolated, and then downsampled prior to generating predictions based on the motion vectors," the *Boyce* reference fails to disclose or suggest that the predictions are generated based on *stored* motion vectors. *Id.* (emphasis added). The *Boyce* reference further provides merely that "the motion vectors which were originally generated based on full resolution video frames are *effectively* applied to downsampled video frames." *Id.* (emphasis added). However, neither this passage nor any other passage of the *Boyce* reference discloses, or even suggests, that motion vectors are stored in the coded data buffer 116 or the frame buffer 118. Rather, the Examiner is implementing a hindsight interpretation of the teachings of the *Boyce* reference in view of claims 1 and 11 to assert that the *Boyce* reference discloses storing motion vectors, rather than relying on an actual teaching by the *Boyce* reference. Accordingly, the *Boyce* reference neither discloses nor suggests the feature of a first memory coupled to store first motion vectors from a video decoder as recited by claim 1 or the feature of storing a plurality of motion vectors and generating one or more second motion vectors based on the stored plurality of first motion vectors as recited by claim 11.

B) Response to Examiner's assertion that the *Takahashi* reference discloses storing motion vectors as provided by claims 1 and 11

As discussed at pages 13-14 of the Appeal Brief, the *Takahashi* reference fails to disclose or suggest the feature of a first memory coupled to the video decoder to store the first motion

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vectors as recited by claim 1 and the similar feature of storing the plurality of first motion vectors as recited by claim 11.

In the Examiner's Answer, the Examiner asserts that the passage at column 9, lines 23-44 of the *Takahashi* reference "clearly teaches the side information, which includes motion vector data, is being provided to scaling circuit 29 so as to be used for decoding within the coder as shown in Figure 2C." *Examiner's Answer*, p. 16. Assuming, *arguendo*, the "side information," includes motion vector data as discussed in the Appeal Brief, Figures 2B and 2C of the *Takahashi* reference illustrate that this "side information" is provided *directly* from the variable length decoder 11 to the scaling circuit 29 without passing through a memory (i.e., without storing the side information). As further discussed in the Appeal Brief, the *Takahashi* reference neither discloses nor suggests that this side information is stored in memory between the variable length decoder 11 and the scaling circuit 29. Accordingly, the *Takahashi* reference neither discloses nor suggests the feature of a first memory coupled to store first motion vectors from a video decoder as recited by claim 1 or the feature of storing a plurality of motion vectors and generating one or more second motion vectors based on the stored plurality of first motion vectors as recited by claim 11.

C) Response to the Examiner's assertion that there is motivation to combine the *Boyce* and *Takahashi* references

As discussed at pages 16-17 of the Appeal Brief, not only there is no motivation to combine the teachings of the *Boyce* reference with the teachings of the *Takahashi* reference, the *Boyce* and *Takahashi* references teach away from their combination. Specifically, it was noted that the nature of the problems solved by the *Boyce* reference and the *Takahashi* reference are different and no suggestion or motivation to combine the references therefore is provided. The

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Boyce reference identifies reducing memory in decoders as a problem to be resolved in obtaining a low-cost decoder. See *Boyce*, col. 2, lines 1-25. The *Takahashi* reference focuses on the problem of maintaining high-quality images transmitted by a television broadcast station, such as high-definition television (HDTV) video. See *Takahashi*, col. 3, line 34 *et seq.* As noted in the Appeal Brief, the Final Action provides no evidence in support of the broad assertion that the *Boyce* and *Takahashi* references provide motivation for their combination. Given the different nature of the problems being solved, absent some other showing, there is no motivation for one of ordinary skill in the art to combine the *Boyce* and *Takahashi* references as proposed.

Moreover, not only is there an absence of a suggestion to combine the *Boyce* and *Takahashi* references, such a combination would destroy the purpose of the invention of the *Boyce* reference. Specifically, the *Boyce* reference is directed to a decoder having a reduced size memory buffer to provide a low cost decoder that is not capable of providing an HDTV picture quality. See *Boyce*, col. 4, line 31 *et seq.* The *Takahashi* reference discloses a system with two encoders that require HDTV quality be maintained. *Takahashi*, col. 7, line 63 *et seq.* The combination of the teachings of the *Takahashi* reference, which seeks to attain HDTV or near-HDTV quality, with the teachings of the *Boyce* reference prohibits the implementation of cost saving features required in the *Boyce* reference, such as reduced memory size.

The proposed combination of the *Boyce* and *Takahashi* references further destroys the purpose of the invention of the *Takahashi* reference as the *Boyce* reference discloses reducing the resolution of received high-definition (HD) pictures prior to decoding, thereby reducing the complexity of later processing stages of the decoder. In contrast, the *Takahashi* reference requires maintaining full HDTV video decoding quality. See, e.g., *Takahashi*, the output to 28 in FIG. 2B and output to 40 in FIG. 2C. The data reduction of the *Boyce* reference prior to

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decoding destroys the ability of the *Takahashi* reference to maintain full HDTV video as is explicitly sought by the *Takahashi* reference.

In the Examiner's Answer, the Examiner responds solely by stating that "the Examiner wants to point out that though Boyce et al and Takahashi et al may teach various features that are different from the present invention, it is still nevertheless that *Boyce* et al and *Takahashi* et al renders obvious the claimed invention as explained in the above." *Examiner's Answer*, p. 16. The Appellant submits that this general assertion does not sufficiently establish that either the *Boyce* reference or the *Takahashi* reference provides motivation for their combination or that the knowledge of one skilled in the art would be motivated as such. Further, this statement does not provide any support to contradict the Appellant's assertion that the *Boyce* reference and the *Takahashi* reference each teach away from their combination. Thus, the Examiner fails to establish a *prima facie* case for motivation to combine the *Boyce* and *Takahashi* references.

D) Summary

All of the currently pending claims are rejected based on a combination of the *Boyce* reference and the *Takahashi* reference. As discussed above in sections 1-3, the *Boyce* reference and the *Takahashi* reference fail to disclose or suggest, individually or in combination, at least one feature of each of independent claims 1 and 11, from which the remaining pending claims depend. Further, as discussed above, not only is there no motivation to combine the *Boyce* reference and the *Takahashi* reference as proposed, the *Boyce* reference and the *Takahashi* reference each teach away from their proposed combination. As none of the other cited references compensate for the failings of the *Boyce* and *Takahashi* references with respect to the subject matter of claims 1 and 11, the obviousness-type rejections of the pending claims are improper and should be withdrawn.

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For the reasons given above, the Appellant respectfully requests reconsideration and allowance of all claims and that this patent application be passed to issue.

Respectfully submitted,



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